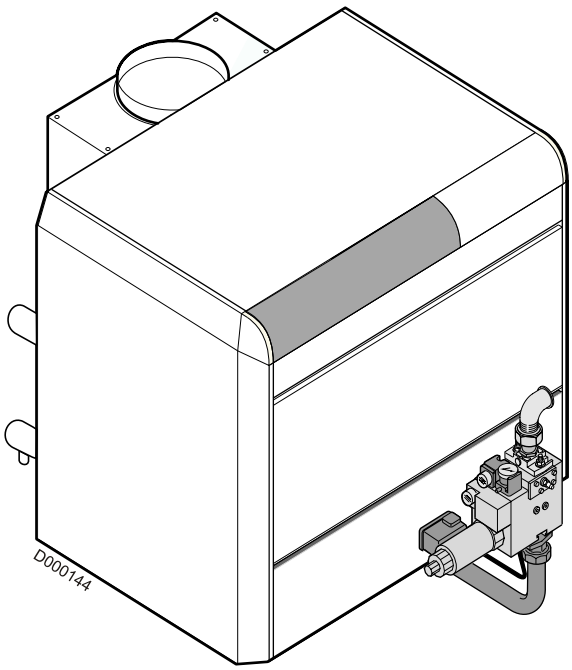
EN

Gas-fired boilers

GAS 460 S



Installation and Service Manual

300005247-001-E

remeha

Contents

1 Introduction

1.1 Used symbols

Caution danger
Risk of injury and damage to equipment. Attention must be paid to the warnings on safety of persons and equipment.

Specific information
Information must be kept in mind to maintain comfort.

Reference
Refer to another manual or other pages in this instruction manual.

DHW: Domestic hot water

1.2 General

Congratulations on your choice of a high quality product. We strongly advise you to read the following instructions in order to guarantee the optimal operation of your appliance. We are sure that it will be entirely to your satisfaction and will meet with all of your expectations.

- Keep these instructions in a safe place close to the appliance.
- For a proper operating of the boiler, follow carefully the instructions.
- The manufacturer is not liable for any improper use of the appliance or failure to maintain or install the unit correctly (the user shall take care to ensure that the system is installed by a qualified engineer).
- In the interest of customers, REMEHA are continuously endeavouring to make improvements in product quality. All the specifications stated in this document are therefore subject to change without notice.

1.3 Homologations

It is CE approved under the following number : 0085BL0187

The boilers are in compliance with the EC directives:

- Royal Decree dated 8th January 2004
- 90/396/EEC Gas Appliance Directive
- 2006/95/EC Low Voltage Directive
  Reference Standard: EN 60.335.1
- 2004/108/EC Electromagnetic Compatibility Directive
  Reference Standard: EN 50.081.1 ; EN 50.082.1 ; EN 55.014
- 92/42/EEC Efficiency Directive **CE,
  Low temperature gas boiler
- Type B11 ($B11_{BS}$ if fitted with the optional combustion products discharge control system).

France:

Performance class III boiler according to ATG B 84 recommendations.

Belgium:

The boilers comply with the specifications of the HR+ quality label.

The boilers should be fitted with a 160 VA circuit separation transformer (delivered with the documentation package).

1.3.1 Directive 97/23/EC

Gas and oil boilers with a maximum operating temperature of 110°C and hot water tanks with a maximum operating pressure of 10 bar pertain to article 3.3 of the directive, and therefore, cannot be CE-marked to certify compliance with the directive 97/23 EC.

The boilers and hot water tanks are designed and manufactured in accordance with the sound engineering practice, as requested in article 3.3 of the directive 97/23/EC; it is certified by compliance with the directives 90/396/EC, 92/42/EC, 2006/95/EC and 2004/108/EC.

1.3.2 User country

User country	ES, GB	HU
Category	I_{2H}	I_{2H}
Gas type	G20	G20
Distribution pressure (mbar)	20	25

The boilers leave the factory operating with H natural gas.

2 Safety instructions and recommendations

2.1 Safety instructions

■ Fire hazard

Do not stock products of an inflammable nature close to the appliance.

If you smell gas, do not use a naked flame, do not smoke, do not operate electrical contacts or switches (doorbell, lights, motor, lift, etc.).

1.Isolate the gas supply

2.Open the windows
3.Extinguish all flames
4.Evacuate the premises
5.Contact a qualified professional
6.Inform the gas supplier

■ Risk of intoxication

Do not obstruct the air inlets in the room (even partially).

If you smell flue gases
1.Switch the appliance off
2.Open the windows
3.Evacuate the premises
4.Contact a qualified professional

■ Risk of being burnt

Avoid direct contact with the flame viewport.

Depending on the settings of the appliance:

- The temperature of the flue gas conduits may exceed 60°C
- The temperature of the radiators may reach 95°C
- The temperature of the domestic hot water may reach 65°C

■ Risk of damage

Do not stock chloride or fluoride compounds close to the appliance.

Install the appliance in frost-free premises.

Do not neglect to service the appliance: Contact a qualified professional or take out a maintenance contract for the annual servicing of the appliance.

2.2 Recommendations

Only qualified professionals are authorised to work on the appliance and the instalation.

Before any work, switch off the mains supply to the appliance.

Check regularly that the installation contains water and is pressurised.

Keep the appliance accessible at all times.

Avoid draining the installation.

The appliance should be on Summer or Antrifreeze mode rather than switched off to guarantee the following functions:

- Frost protection
- Protection against corrosion on domestic hot water tanks fitted with a titanium anode

3 Technical description

3.1 General description

Gas 460 S boilers are made of cast iron:

- with atmospheric gas burners
- with 2 operating stages
- with electronic ignition via the ignition burner for hot water central heating
- with a useful output of between 119 and 380 kW

They are designed to be connected to a chimney.

The figure given after Gas 460 S indicates the number of sections which make up the boiler.

Gas 460 S boilers are delivered with a K control panel. They can be fitted with an optional RC4 and RC5 control unit (master-secondary control unit options).

3.2 Technical characteristics

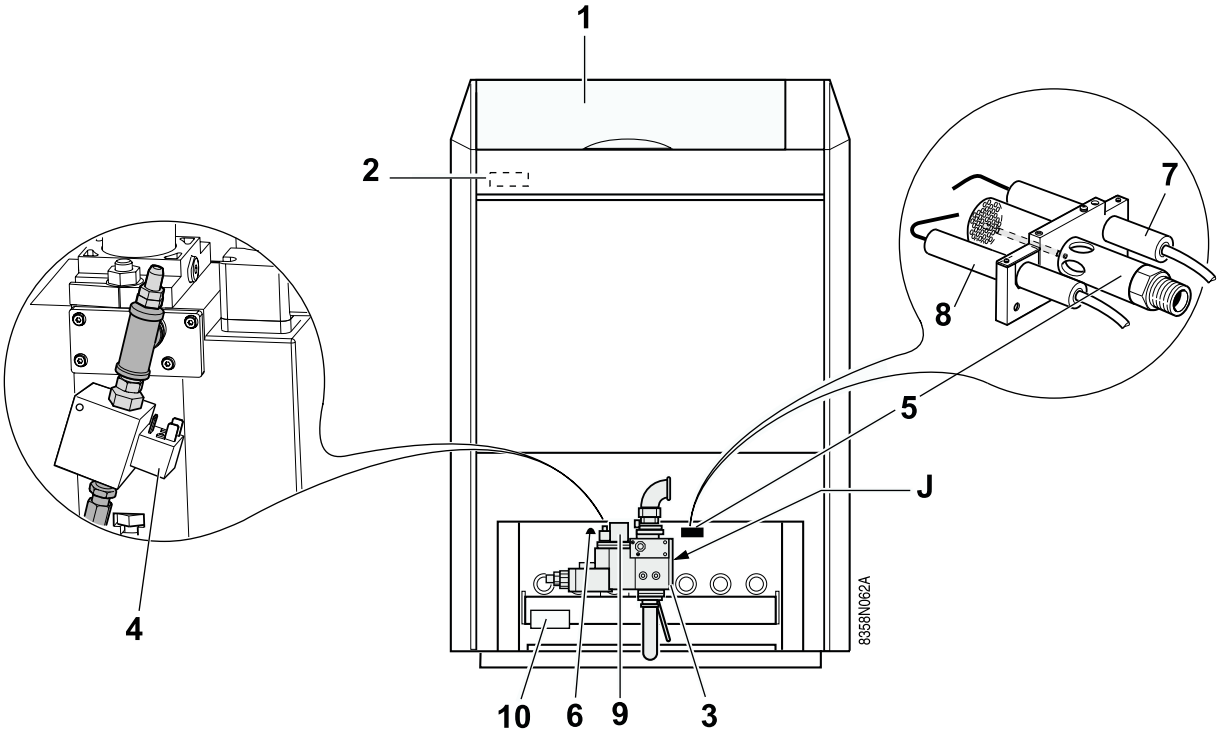
The boilers can operate on natural gases type H/L.

Boiler	**Gas 460 S /**		8	10	12	14	16	18	20
Useful output	1st stage	kW	83-98	107-126	131-154	155-182	179-210	202-238	226-266
	2nd stage	kW	119-140	153-180	187-220	221-260	255-300	289-340	323-380
Power input	1st stage	kW	93.1-108.9	119.4-139.7	145.6-170.4	171.9-201.1	197.9-231.8	224-262.1	250.1-292.6
	2nd stage	kW	131.1-153	168.2-196.3	205.2-239.4	242.2-282.6	278.8-325.4	315.7-368.4	352.4-411.3
Number of sections		Part	8	10	12	14	16	18	20
Mass flue gas flow rate (1)		kg per sec	0.097	0.127	0.144	0.177	0.191	0.203	0.258
Flue gas temperature Tf Boiler temperature 80°C		°C	125	123	130	126	133	140	126
CO_2	1st stage	%	3.9-4.9	3.8-4.8	4.3-5.3	4.0-5.0	4.5-5.5	5.0-6.0	4.0-5.0
	2nd stage		5.4-6.4	5.3-6.3	5.8-6.8	5.5-6.5	6.0-7.0	6.5-7.5	5.5-6.5
Ionization current		µA	1.0						
Required depressurisation at the nozzle		daPa	0.7						
Minimum outlet temperature		°C	40						
Maximum outlet temperature		°C	90						
Maximum operating pressure		bar	6						
Electrical connection		V/Hz	230/50						
Electrical power		W	108 / 114 maximum						
Gas connection	20 mbar	inch	1"	1"	1"	1"1/4	1"1/4	1"1/4	1"1/2
Heating connection		inch	2"						
Internal diameter flue gas nozzle		mm	250	300	300	350	350	350	400
Water resistance (1)	Δ T = 10K	mbar	80	133	198	277	369	474	592
	Δ T = 15K		36	59	88	123	164	211	263
	Δ T = 20K		20	33	50	69	92	118	148
Water content*		l	61	76	91	106	122	137	154
Shipping weight		kg	668	807	934	1096	1227	1364	1476

(1) at 2nd stage

1 mbar = 10 mmWG = 10 daPa = 100 Pa

3.3 Main parts



1	**Control panel**
2	**Safety box** The safety control box is fitted to the control panel and controls the burner ignition, function and extinction sequences.
3	**Multivalve gas unit**: It includes a safety valve and a 2-stage principal valve with filter and minimum gas pressure switch.
4	**Ignition burner valve**
5	**Ignition burner**
6	**Flame inspection window**
7	**Ionization probe**: It detects flame presence on the ignition burner by flame ionization.
8	**Ignition electrode**: This ensures ignition burner ignition using a high voltage spark.
9	**Minimum gas pressure switch** (Minimum pressure: 12.5 mbar)
10	**Ignition box**

3.4 Operating principle

3.4.1 Furnace operation equipped with safety box RV 00 541 400 00

■ Operating principle

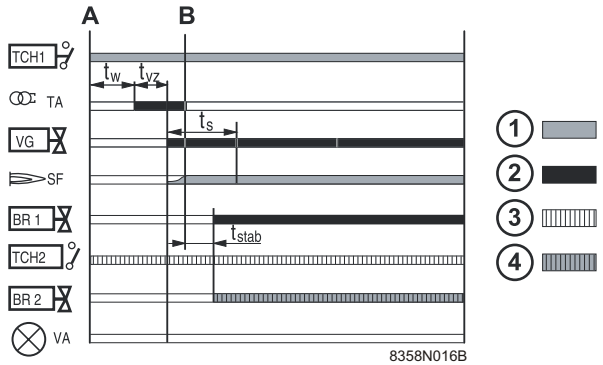
The boiler can operate at either 2nd stage or 1st stage depending on the thermal needs of the installation.

The ignition and burner surveillance sequences are ensured by the safety box.

■ Behaviour in normal conditions

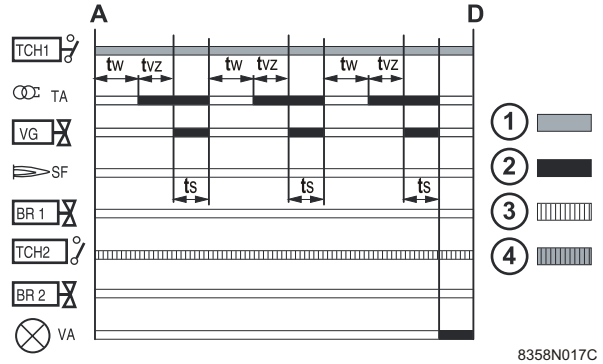
The box closes the TCH contact when there is a requirement for heat1. The safety control box runs an auto-check of around 1 second(s).

After a waiting time **tw**, the ignition transformer **TA** produces a series of sparks at the ignition electrode. After a pre-ignition period **tvz**, the ignition burner valve **VG** and the safety valve **VS** open. Formation of flame in ignition burner. The ionization sensor **SF** shows a flame signal with a minimum ionization current of 1 µA and ignition is shut down. After a period of stabilisation **tstab**, the principal burner ignites at 1st stage **BR1** (or at 2nd stage if the 2nd stage thermostat **TCH2** is needed).



■ Behaviour in abnormal conditions

- If a flame is not detected before the safety time ts, the box makes 2 more ignition attempts. If, at the end of the last attempt, there is still no flame signal, the box goes into safety and the safety indicator comes on. To restart the heater, press the reset button on the safety box.
- If there is a loss of flame in normal operation, the box automatically repeats the start up sequence.



■ Resetting

The box is reset after going into safety by pressing the reset button. If the reset button does not work, wait at least 15 seconds before trying a second time. After activating the reset button, the warning light goes out and the safety control box restarts **after a waiting time of around 1 minute**.

Note 1: The box may be on safety on its first start up: press the reset button to release it.

Note 2: If the reset button is pressed in normal operation, the gas valves close and the box starts a new ignition sequence.

①	Required input signals
②	Box output signals
③	Thermostatic request at 2nd stage
④	Operation 2nd stage

A	Start of operation
B	Formation of flame in ignition burner
BR1	1st stage
BR2	2nd stage
SF	Burner flame signal
TA	Ignition transformer
TCH1	Boiler thermostat 1 stage
TCH2	Boiler thermostat 2 stage
VA	Safety lockout warning light
VG	Ignition burner valve + Safety valve **VS**
ts	Safety time: maximum 10 seconds
tstab	Flame stabilisation time: 5 seconds
tvz	Pre-ignition time: 10 seconds
tw	Waiting time: 0 seconds

4 Installation

4.1 Regulations governing installation

4.1.1 Other countries

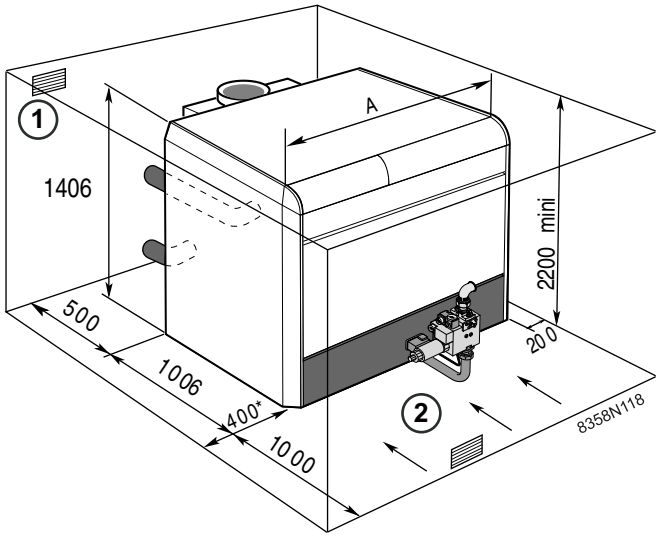
Installation and maintenance of the boiler must be carried out by a qualified professional in compliance with prevailing local and national regulations.

4.2 Package list


Assembly Instructions

4.3 Mounting

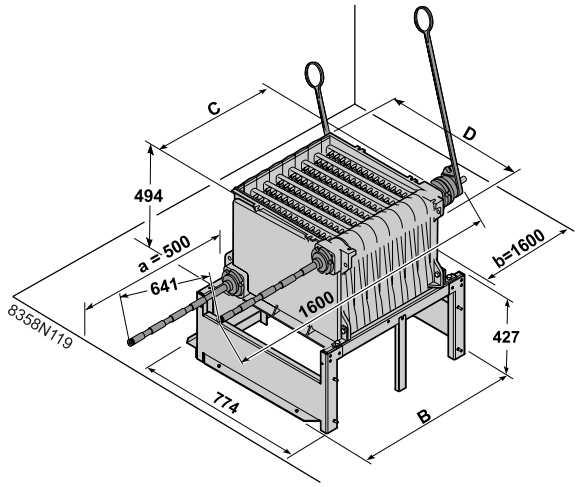
4.3.1 Position of the boiler



* Water connection side

- The combustive air must reach the burner from the front.
- The dimensions (in mm) correspond to the minimum recommended dimensions needed to ensure adequate accessibility around the boiler.
- Dimensions **a** and **b** correspond to the dimensions to be respected to ensure clearance of the assembly tool JD-TE Plus.
  If a = 1400 mm , b = 500 mm
  If a = 500 mm , b = 1400 mm

It is forbidden to store inflammable products and materials in the boiler room or close to the boiler, even temporarily. A safety distance of at least 2 metres should be respected.



Gas 460 /...		8	10	12	14	16	18	20
A (mm)		970	1146	1322	1498	1674	1850	2026
B (mm)		938	1114	1290	1466	1642	1818	1994
C(1) (mm)		704	880	792	880	968	1056	1760
D	Side section (mm)	704	704	704	704	704	704	704
	Intermediate section	720	720	720	720	720	720	720

(1) Thickness of a section

4.3.2 Ventilation

The location of air inlets in relation to the high ventilation openings shall ensure that the air is renewed in the entire volume of the boiler room.

Please refer to the prevailing regulations in your country.

▶ France:

Direct air inlet:

- Boiler with nominal output greater than 70 kW in accordance with DTU 65.4 (NF P 52-221)

  Upper and lower air vents compulsory
  - Upper air vents ①
    Cross section equal to half the total cross section of the flue gas pipes with a minimum of 2.5 dm²
  - Lower air vents ②
    Direct air inlet:

$$S(dm^2) \geq \frac{0,86P}{20}$$

P = Installed output in kW

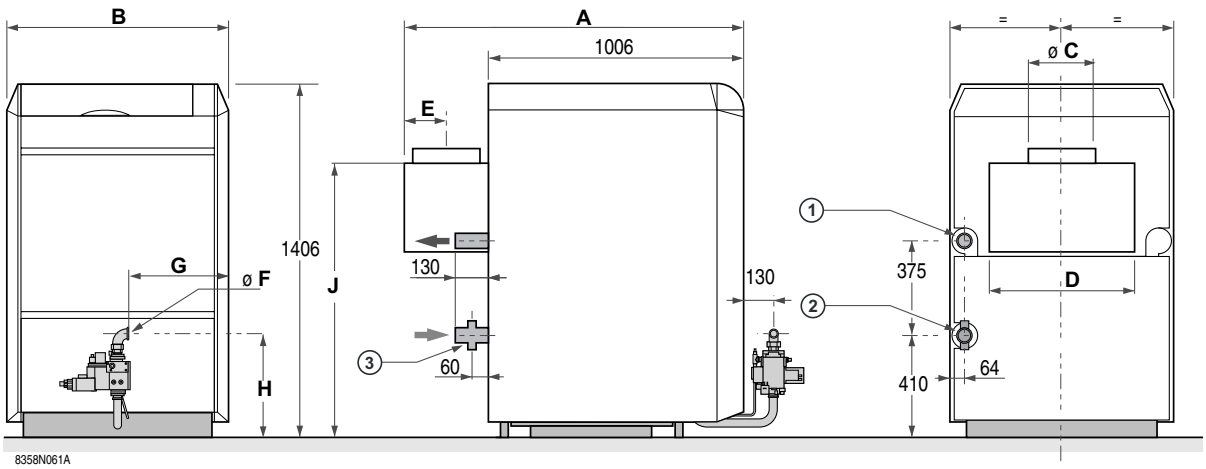
Ensure a supply of air through the front of the burner but avoid serious draughts.

Bottom aeration, even correctly dimensioned but positioned to the rear of the boiler close to the draught diverter, may turn out to be totally ineffective.

Incoming air is directly drawn in by the draught cut off without reaching the burner.

An indirect air inlet through descending conduits presenting serious airotic losses of load or input of meteorological conditions influencing their draw should be avoided.

4.3.3 Main dimensions



❶ Heating outlet R 2

❷ Heating return R 2

❸ Draining Rp 3/4

Boiler Gas 460 S	/8	/10	/12	/14	/16	/18	/20
A (mm)	1362	1362	1362	1412	1412	1412	1462
B (mm)	970	1146	1322	1498	1674	1850	2026
Ø C (mm)	250	300	300	350	350	350	400
D (mm)	632	808	984	1160	1336	1512	1688
E (mm)	165	165	165	190	190	190	220
Ø F (mm) (20/25 mbar)	Rp1	Rp1	Rp1	Rp1 1/4	Rp 1 1/4	Rp 1 1/4	Rp 1 1/2
Ø F (mm) (300 mbar)	Rp 3/4						
G	447	535	623	704	792	880	963
H	445	445	445	454	454	454	507
J	1094	1094	1094	1194	1194	1194	1194

4.3.4 Assembling the appliance

See assembly instructions

4.4 Hydraulic connections

4.4.1 Regulations

Installation must be carried out in accordance with the prevailing regulations, the codes of practice and the recommendations in these instructions.

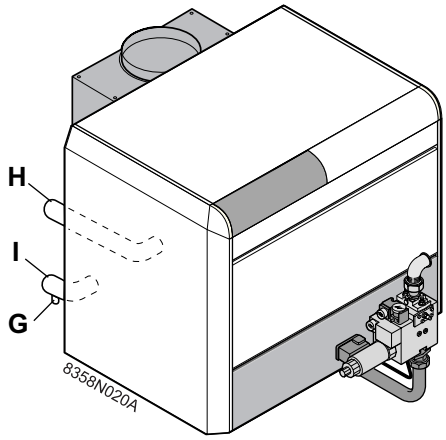
■ Installing the boiler in new installations (installations less than 6 months old)

- Clean the installation with a universal cleaner to eliminate debris from the appliance (copper, flaxen thread, flux).
- Thoroughly flush the installation until the water runs clear and shows no impurities.

■ Installing the boiler in existing installations

- Remove sludge from the installation.
- Flush the installation.
- Clean the installation with a universal cleaner to eliminate debris from the appliance (copper, flaxen thread, flux).
- Thoroughly flush the installation until the water runs clear and shows no impurities.

4.4.2 Hydraulic connection of the heating circuit



G Draining Rp 3/4
H Heating outlet R 2" (1)
I Heating return R 2" (1)

(1) Welded connection possible after sawing off the threading.

The hydraulic connections must be made on the same side (either right or left) but never in quincunx.

Install a sludge decanting pot on the return pipe, very close to the boiler.

4.5 Gas connection

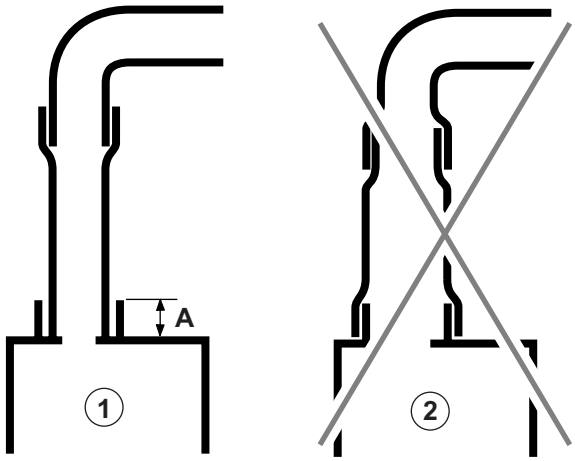
Gas connection is possible to the right or left of the boiler.

It is necessary to abide by the prevailing instructions and regulations. Each time, a blocking tap will be located as near as possible to the heater. A **gas filter** must be fitted to the boiler inlet.

■ Other countries

The diameters of the pipes must be defined in accordance with the standards in force in your country.

4.6 Connection to a chimney



① **Good**

② **Poor**

A 40 mm (minimum)

The appliance must be installed in accordance with the Codes of Practice using a leak proof pipe made of a material capable of withstanding hot combustion gases and any acidic condensation. The pipe must be laid out to allow any likely condensation to drain.

It must be in accordance with existing regulations for pipes used for this purpose. Standard meshed connection pipes are to be avoided. The pipe connecting the outlet conduit must also be as short as possible and without a reduced diameter.

The vertical section of the draught diverter outlet must be a minimum length 3x the diameter of the nozzle before an elbow joint is fitted.

The pipe must have a diameter not less than the heater's nozzle diameter along its whole length. This pipe must be able to be easily disassembled and must not have a sudden change in diameter.

The outlet conduit must be maintained in a good condition, checked and cleaned at least once a year.

4.7 Electrical connections

Only qualified professionnals may carry out electrical connections, always with the power off.

Do not modify the connections inside the control panel.

Make the electrical connections of the appliance according to:

- the instructions of the prevailing standards,
- the instructions on the circuit diagrams provided with the appliance,
- the recommendations in the instructions.

■ Standards to be respected

Other countries: The electrical connections shall comply with standards in force.

■ Rules to be respected

- Power the appliance via a circuit which includes a remote omnipolar switch with a gap of more than 3 mm.
- Connect all of the cables to the terminal blocks in the control panel.

Keep to the polarity shown on the terminals: phase (L), neutral (N) and earth ⏚.

The available output per outlet is 450 W (2 A, with cos φ = 0.7) and the inrush current must be lower than 16 A.
If the charge exceeds one of these values, relay the command using a contactor (fitted outside the control panel).

Separate the sensor cables from the 230 V cables.
Outside the boiler : Use 2 pipes or cable guides at least 10 cm apart.

For the 230 V electrical connections, use 3-wire cables with a cross-section of 0.75 mm². For other electrical connections, use the 3 wire cable with a diameter of 0.75 mm².

Make the electrical connections:

Control panel instructions.

Options brochure.

4.8 Skeleton Diagrams

Control panel instructions

5 Start-up

Initial commissioning must be done by a qualified professional.

5.1 Control panel

Control panel instructions

5.2 Check points before commissioning

The first start-up is to be performed by your installation/ commissioning engineer.

Make the gas line setting before commissioning.

Check the following points before starting the heater:

■ Hydraulic circuit:

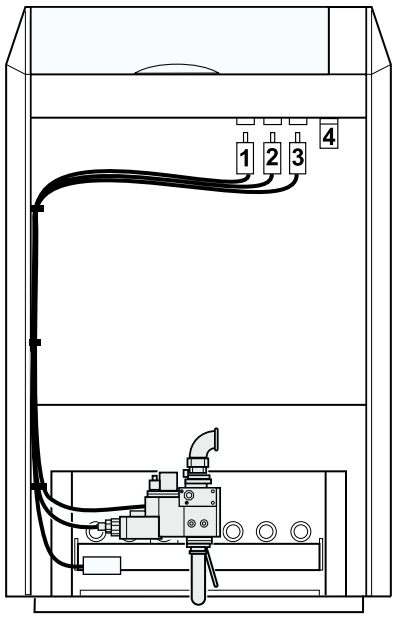
- Check that the installation and boiler are adequately filled with water and correctly irrigated and bled.
- Check that there are no leaks on the hydraulic connections.

■ Gas circuit:

- Check the adjustment of the gas line:
  - Connect a manometer to the pressure socket located on the manifold.
  - Check that the nozzle pressure and the start-up pressure match the pressures given in the relevant chapter: Pressure settings and calibrated injector markings.
    If necessary, adjust the pressure as shown in the relevant chapters: Setting the injector pressure.

■ Electrical connectors:

Check that the connectors under the control panel are correctly fitted:



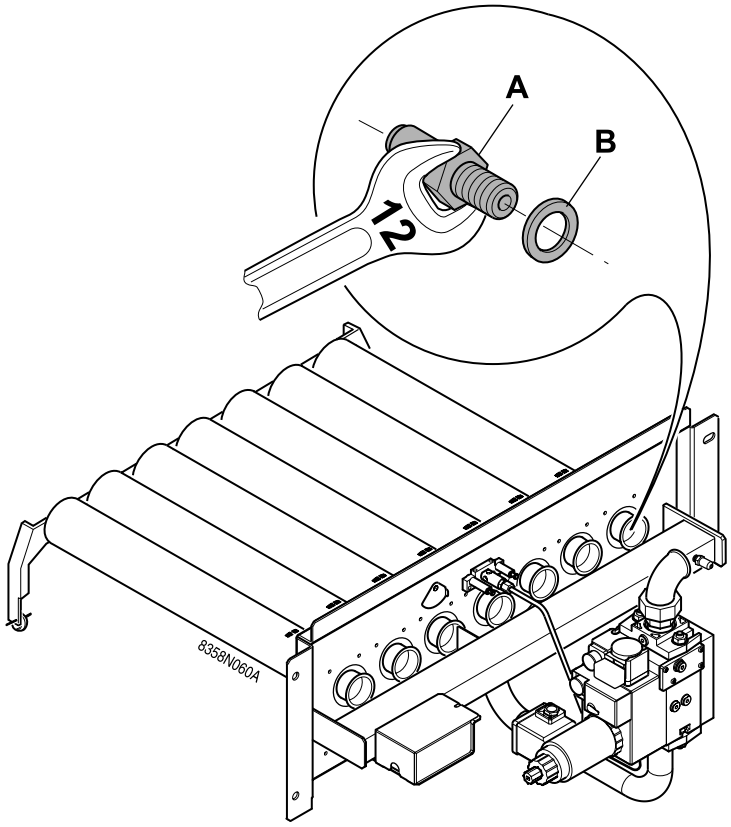
1	Ignition circuit
2	Gas pressure switch
3	Gas valve circuit
4	Leak proofing system (Options RE 30)

5.3 Gas settings

The boilers are factory-set to operate on natural gas H (G20 - 20 mbar).

To convert it to natural gas L, use the gas L conversion kit (optional). Carry out the operations described below.

5.3.1 Changing the burner injectors



- Close the gas valve.
- Lift out the injector with a number 12 spanner assemble the new injectors with their new joint.

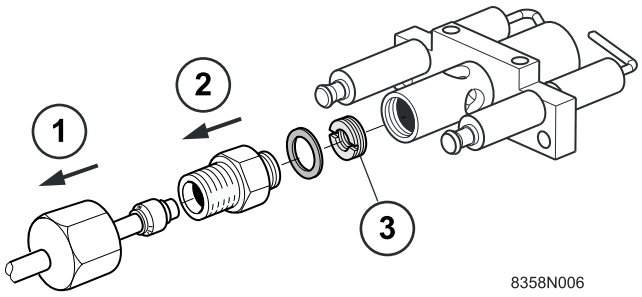
First tighten the injectors by hand and carefully lock them using a spanner.

- Carry out a leak tightness check.

	Natural gas H	Natural gas L
Nozzle marking	390A	450A
Nozzle diameter	3.9 mm	4.5 mm

5.3.2 Changing the ignition burner injector

Operations to be carried out to convert from natural gas H to natural gas L and vice versa:



① Remove the gas supply pipe from the ignition burner (13 mm spanner).

② Remove the nozzle + seal.

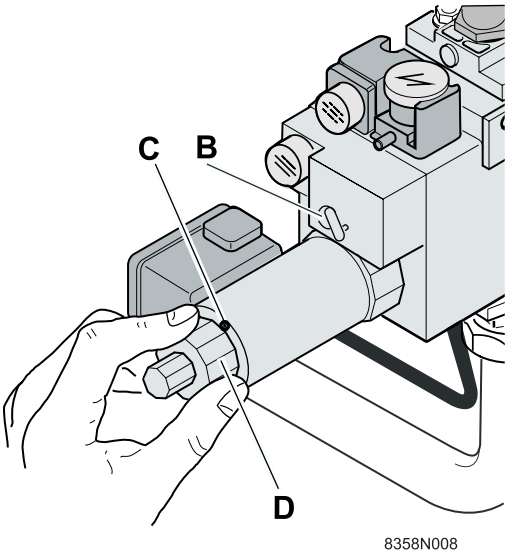
③ Unscrew the nozzle using a screwdriver and screw in the new injector.

- Reassemble the parts
- Carry out a leak tightness check

	Natural gas H	Natural gas L
Nozzle marking	80	100
Nozzle diameter	0.80 mm	1.00 mm

5.3.3 Setting the injector pressure

- **Setting the pressure 2nd stage**



The pressure must be set by a qualified professional.

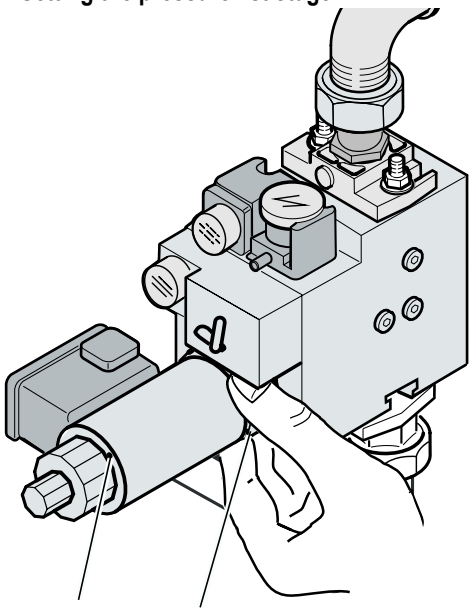
The boiler must be commissioned after having checked the points covered in this chapter: Check points before commissioning.

- Connect a manometer to the pressure outlet.
- Run the boiler at 2nd stage, activating the thermostat(s).
- Set the pressure at the injectors as follows:
  - Free the cylindrical split head screw **C** by around one turn. Fully unscrew the setting button **D** (anti-clockwise). Tighten the screw **C**.
  - Set the pressure at the injectors by turning the screw on the regulator **B**. By turning to the right, you increase and, by turning to the left, you decrease the principal flow.

If you find you cannot tighten screw **B** any further before reaching the desired pressure, unscrew **B** again by a quarter turn and continue the setting by turning **D** after freeing the inhibitor screw **C**.

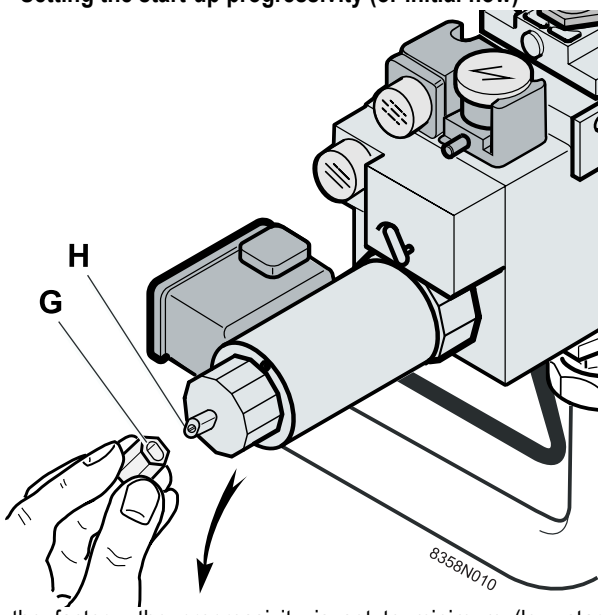
- On propane, the regulator **B** is fully tightened. It is not used.

- **Setting the pressure 1st stage**



- Run the boiler at 1st stage by activating the burner on selector switch on the boiler control panel.
- Set the flow in such a way as to obtain pressure at the injectors (0.5 x Pressure 2nd stage):
  - Set the 1st stage flow with the ring **E**.
  - By turning to the right, you increase and, by turning to the left, you decrease the principal flow.
  - Tighten the inhibitor screw **C**.

- **Setting the start-up progressivity (or initial flow)**



In the factory, the progressivity is set to minimum (low start-up pressure).

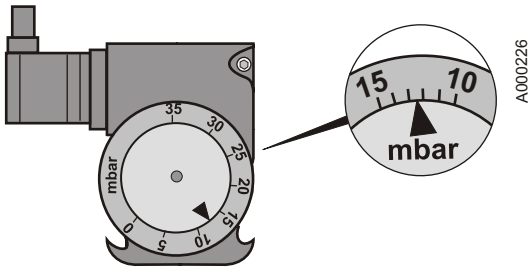
Depending on the installation conditions, adjust the progressivity setting in order to guarantee optimum boiler start-up.

- Unscrew the protection cap **G.** Use like a spanner to turn the setting rod **H** until you obtain the desired initial flow.
- Put the cap back in place.

5.3.4 Setting the gas pressure switch

The minimum gas pressure switch on the safety valve is set in the factory to a value of 12.5 mbar, which corresponds to the setting for natural gas.

If there is a drop in the gas supply pressure, the minimum pressure switch shuts down the boiler.



5.3.5 Attaching the label

Affix the label which indicates for which type of gas the boiler is fitted and set.

5.3.6 Pressure settings and calibrated injector markings

Boiler type Gas 460 S /			8	10	12	14	16	18	20
Useful output									
1st stage		kW	83-98	107-126	131-154	155-182	179-210	202-238	226-266
2nd stage		kW	119 - 140	153 - 180	187 - 220	221 - 260	255 - 300	289 - 340	323 - 380
Power input									
1st stage		kW	93.1-108.9	119.4-139.7	145.6-170.4	171.9-201.1	197.9-231.8	224-262.1	250.1-292.6
2nd stage		kW	131.1-153	168.2-196.3	205.2-239.4	242.2-282.6	278.8-325.4	315.7-368.4	352.4-411.3
Nozzle									
Diameter, principal burner injector Gas H		mm	3.9						
Diameter, principal burner injector Gas L		mm	4.5						
Diameter, ignition burner injector	Gas H	mm	0.8						
	Gas L	mm	1.0						
Gas flow rate									
Gas H	1st stage	m^3/h	9.85-11.52	12.63-14.78	15.41-18.03	18.19-21.28	20.94-24.53	23.70-27.74	26.47-30.96
	2nd stage		13.87-16.19	17.80-20.77	21.71-25.33	25.63-29.91	29.50-34.43	33.41-38.98	37.29-43.52
Gas L	1st stage	m^3/h	11.46-13.40	14.70-17.19	17.92-20.97	21.16-24.75	24.36-28.53	27.57-32.26	30.78-36.01
	2nd stage		16.14-18.83	20.70-24.16	25.26-29.46	29.81-34.78	34.31-40.05	38.86-45.34	43.37-50.62
Downstream gas pressure									
Gas H	1st stage	mmWG	Pressure 1st stage = 0.5 x 2nd stage pressure set						
	2nd stage		90-120						
Gas L	1st stage	mmWG	Pressure 1st stage = 0.5 x 2nd stage pressure set						
	2nd stage		74-100						

1 mbar = 10 mmWG = 10 daPa = 100 Pa

15 °C - 1013 mbar

mmWG = mm of Water Gauge

5.4 Checks and adjustments after commissioning

Carry out all the checks mentioned in the chapter "Checking and maintenance".

6 Stopping the boiler

Set the On/Off switch to **0**.

6.1 Precautions to take if there is a danger of frost

Heating circuit:
Use a correctly dosed antifreeze to prevent the heating water freezing. If this cannot be done, drain the system completely. In all cases, consult the fitter.

Domestic hot water circuit:
Drain the domestic water tank and pipes.

6.2 Precautions to take in the event of prolonged shutdown (one year or more)

- Close the gas valve
- The boiler and the chimney must be swept carefully.
- Close the door of the boiler to prevent the internal circulation of air.

7 Checking and maintenance

7.1 Checks

Make the following checks at least 1 time a year:

- Safety devices
- Water level
- Checking burner safety
- Checking the safety thermostat
- Checking the downdraught thermostat

7.1.1 Safety devices

Check the safety devices (particularly the valve or safety unit), referring to the instructions provided with these components.

7.1.2 Water level

Regularly check the level of water in the installation. Top it up, if need be, avoiding the abrupt input of cold water into the hot boiler. If this operation is repeated several times per season, locate the leak and repair it.

Do not drain the installation, except in cases of absolute necessity. For example: Several months' absence with the risk of ice in the building.

7.1.3 Checking burner safety

Close the gas valve.

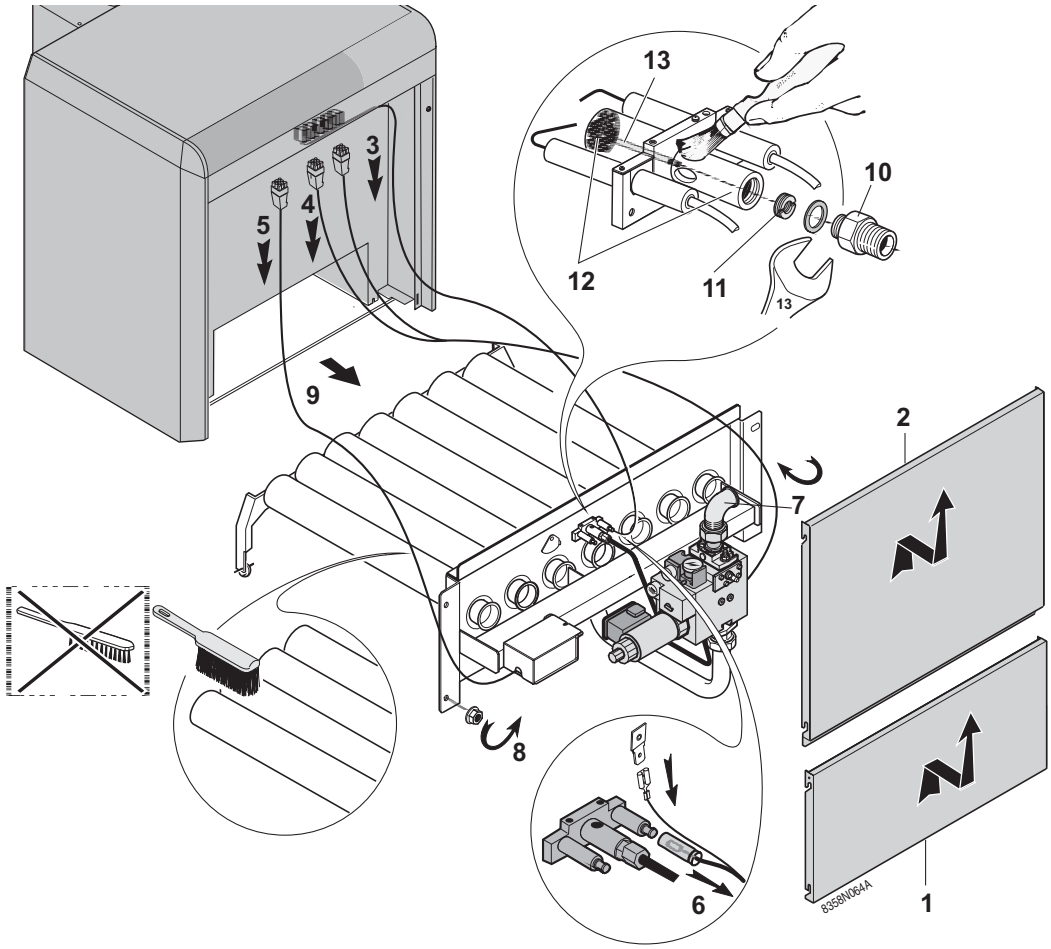
Check the reaction of the safety system. (Safety box on safety because of ionization fault).

7.2 Maintenance

7.2.1 Cleaning main burner and ignition burner

The main burner and the ignition burner injector with its filter must be regularly cleaned to ensure good performance. We recommend doing this at least once a year.

These actions must be carried out by a qualified technician.



■ Main burner

- Cut the power supply to the boiler
- Isolate the gas supply

1	Remove the lower casing panel
2	Remove the intermediate casing panel
3	Disconnect the valve connector
4	Disconnect the gas pressure switch connector (and the leak proofing cyclical control system, if there is one) under the control panel
5	Disconnect the ignition circuit
6	Disconnect the ionization cable and the ground conductor on the ionization sensor side
7	Unscrew the union joint on the gas inlet pipe
8	Unscrew the 4 holding nuts on the burner drawer
9	Take out the burner drawer

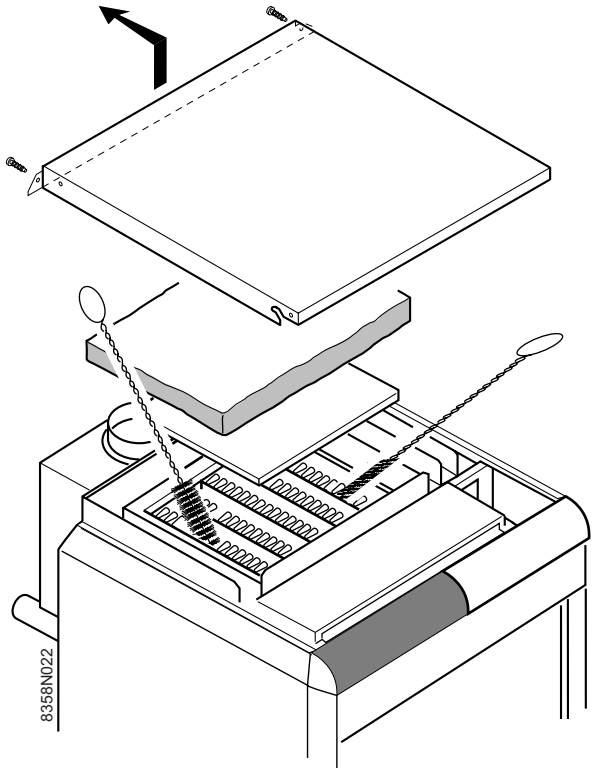
- Clean the burner trains (slits) using a soft brush, a short-handled brush or a vacuum cleaner.

■ Ignition burner

10	Remove the gas supply pipe from the ignition burner (13 mm spanner)
11	Clean the injector
12	Clean the ignition burner
13	Clean the flame stabilisation pipe located inside the ignition burner

Do not use a metal brush.

7.2.2 Cleaning of the heating body



The extent of clogging on the heating body must be checked once a year.

If it is necessary to sweep the boiler, remove the burner drawer to prevent deposits and soot blocking the orifices in the gas trains.

With the burner out:

- Remove the upper casing of the boiler
- Take out the insulation
- Remove the sweeping hatch from the draught diverter
- If necessary, clean the boiler body using the special brush provided
- Clean the combustion chamber using a vacuum cleaner

7.2.3 Painted surfaces

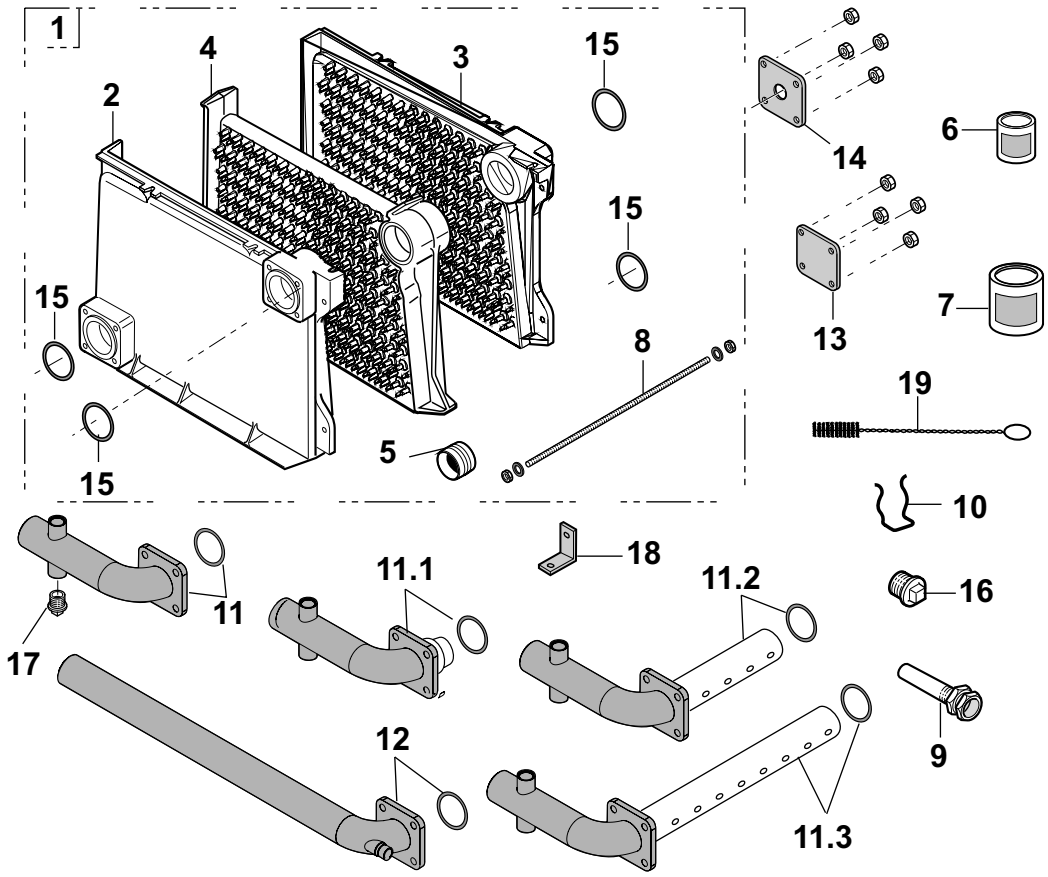
The painted surfaces can be cleaned with tepid or cold soapy water. Wipe the painted surfaces with a soft cloth or a damp sponge.

8 Spare parts Gas 460 S

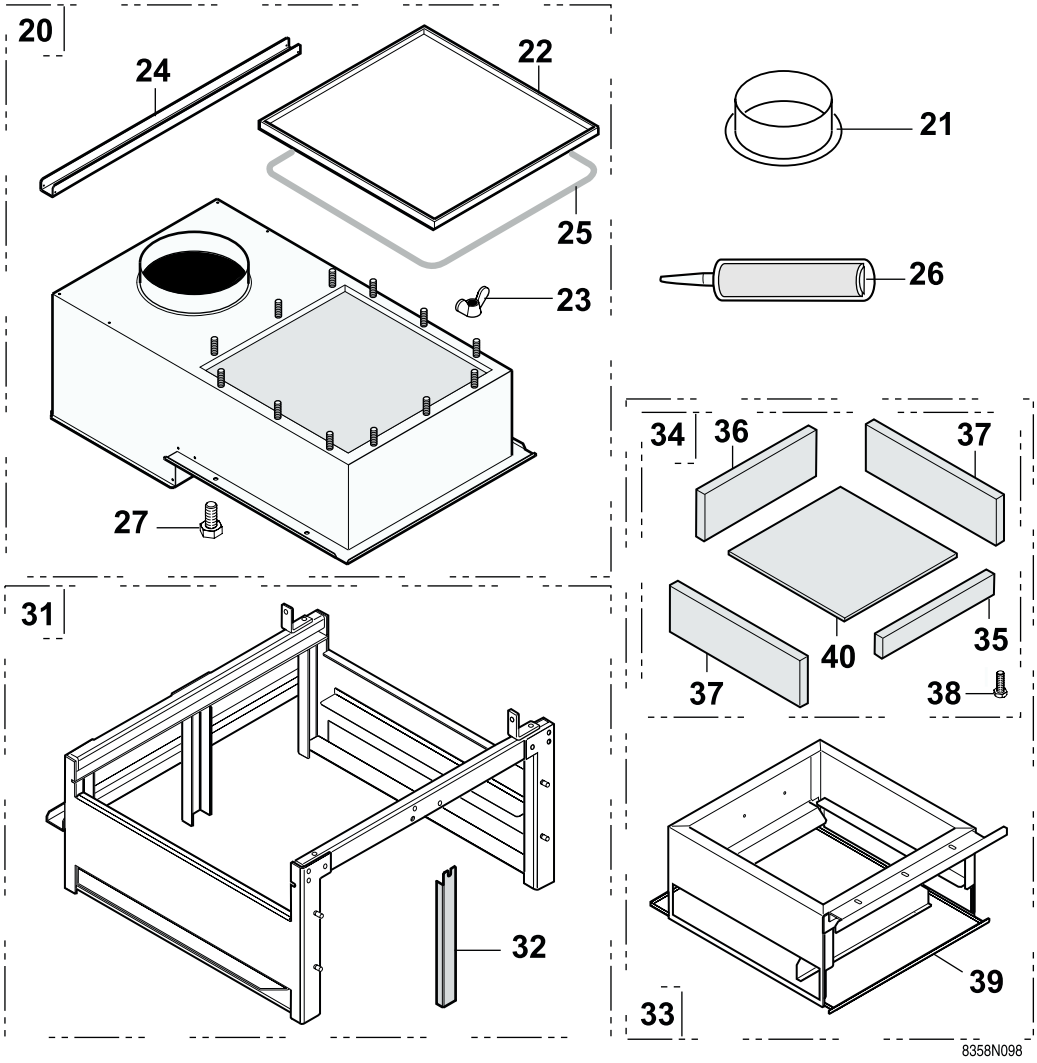
The code number on the list next to the required piece must be stated when ordering replacement parts.

04/01/11 - 300005247-002-A-C

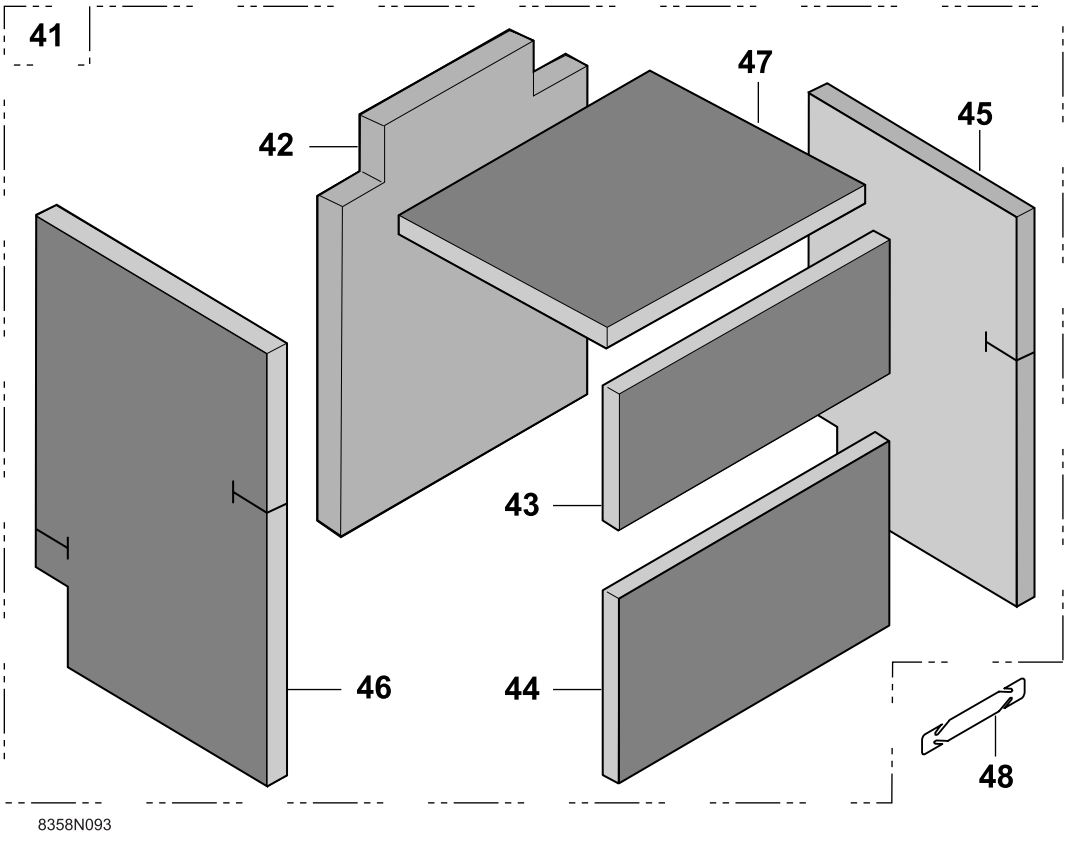
8.1 Boiler body



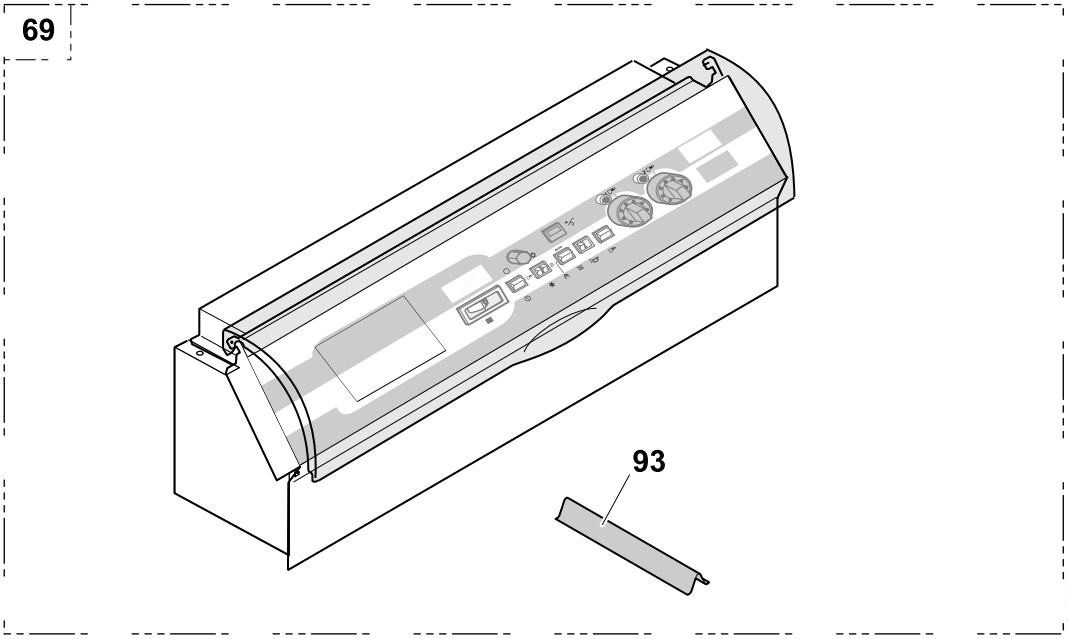
8.2 Base frame + Draught diverter



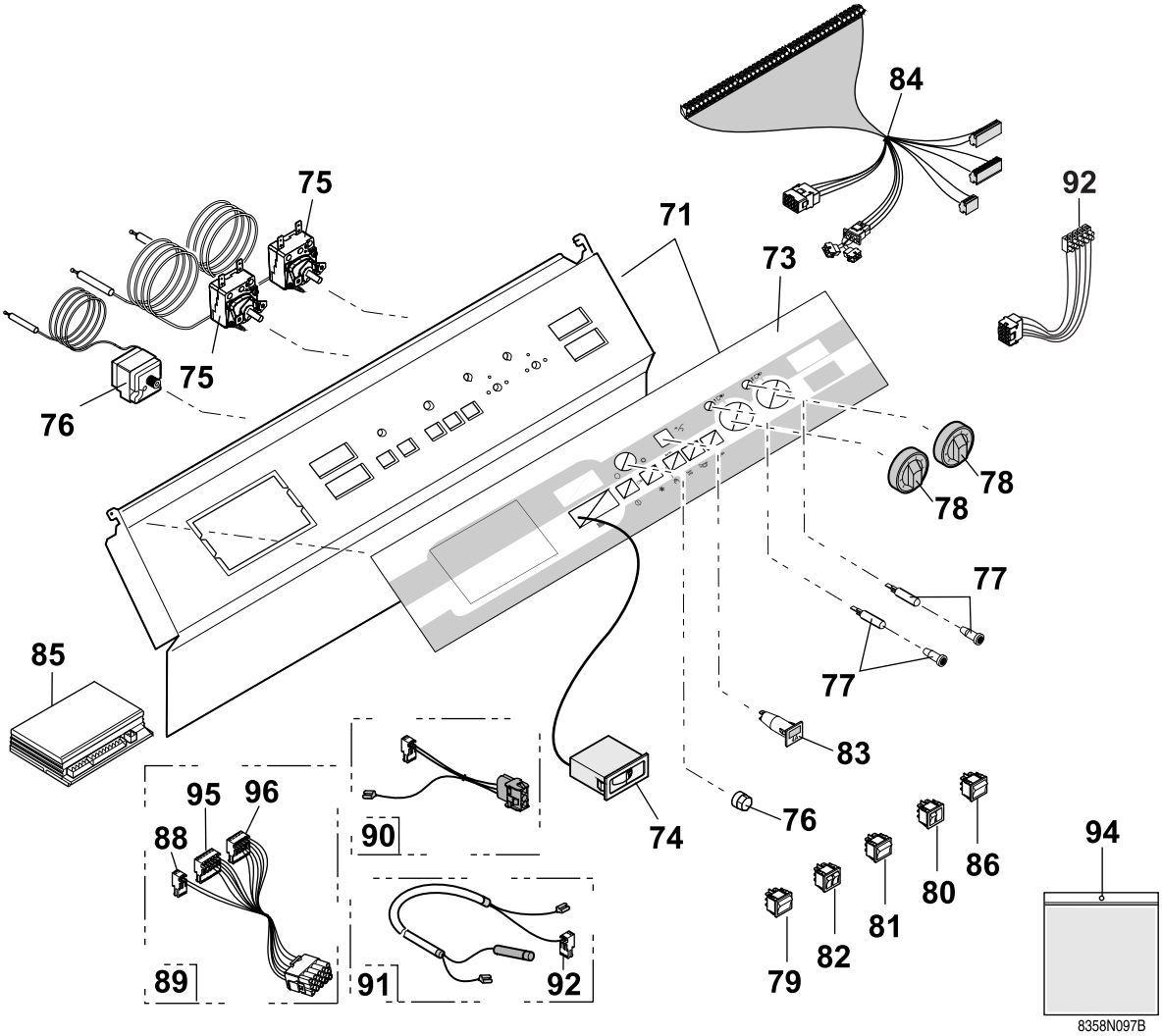
8.3 Insulation



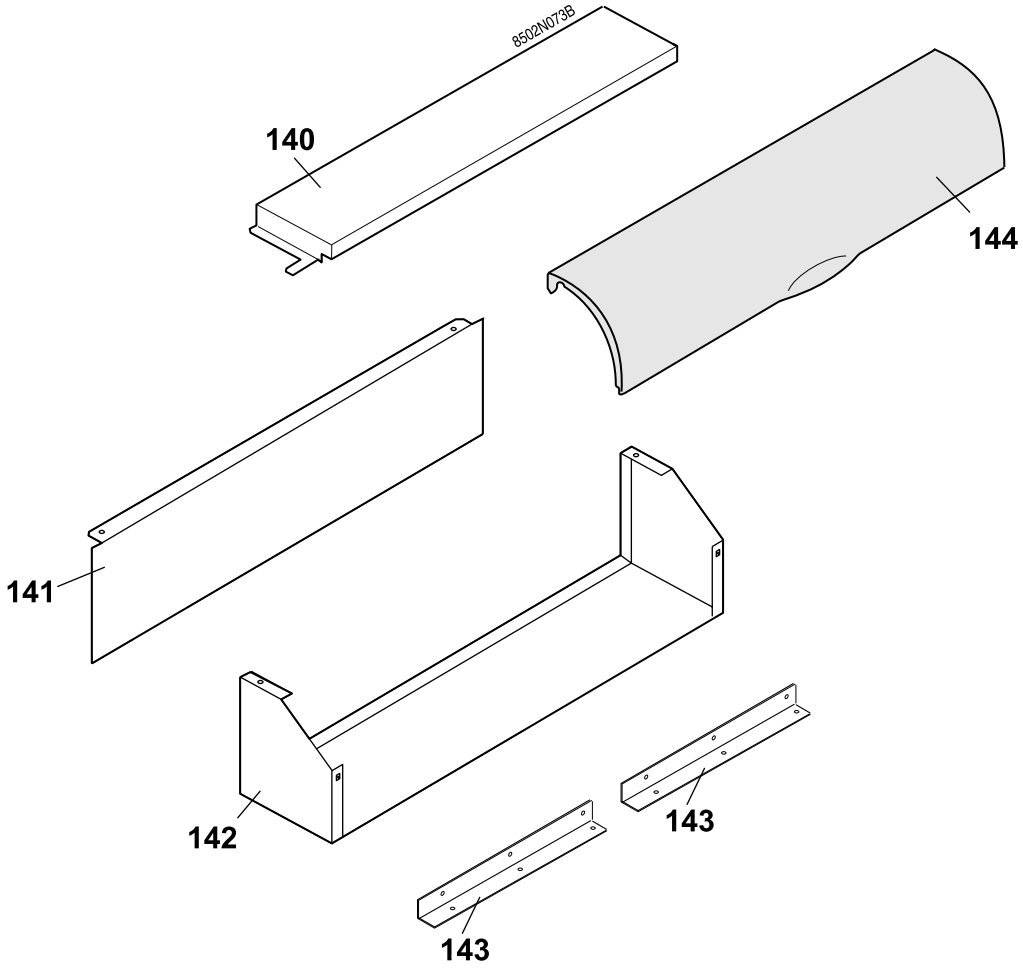
8.4 Control panel K



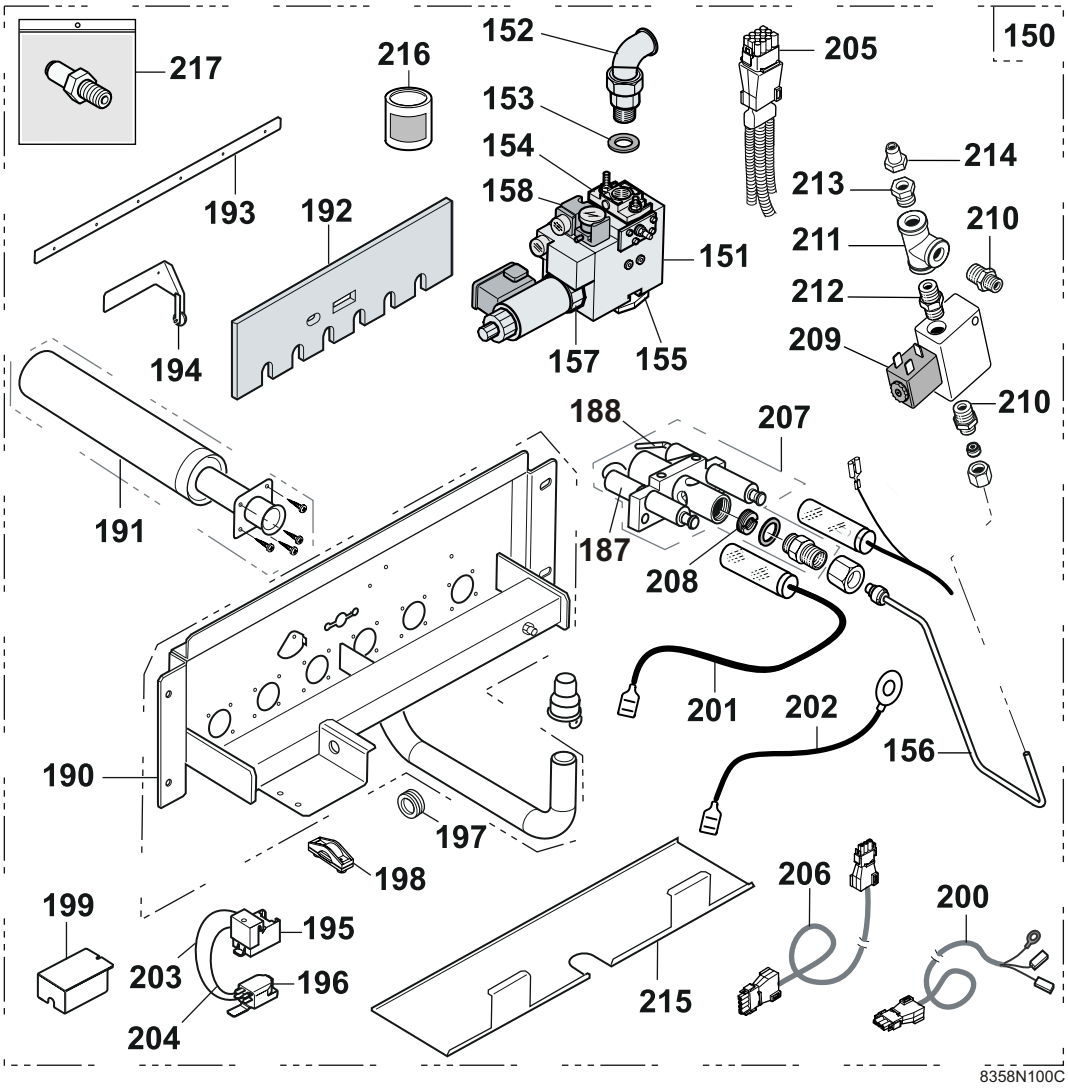
8.5 Control panel K + Components



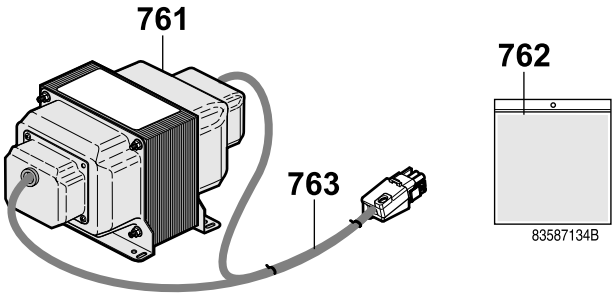
8.6 Metal casing for control panel K



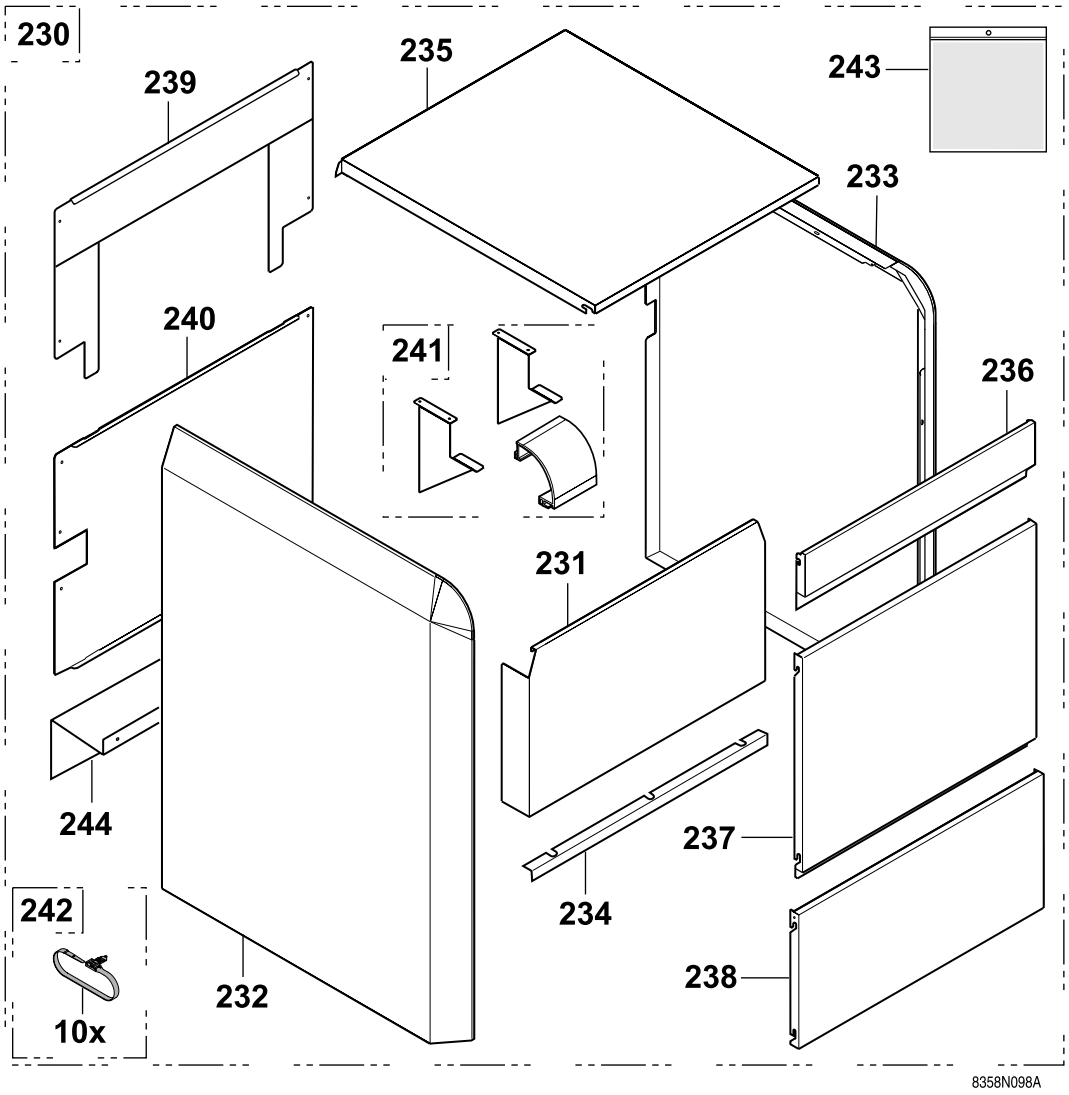
8.7 Gas line 20 mbar



8.8 Circuit separation transformer



8.9 Casing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10x
8358N098A

Markers	Code no.	Description
		Boiler body
1	8358-5500	Boiler body - 8 sections
1	8358-5502	Boiler body - 10 sections
1	8358-5504	Boiler body - 12 sections
1	8358-5505	Boiler body - 14 sections
1	8358-5506	Boiler body - 16 sections
1	8358-5507	Boiler body - 18 sections
1	8358-5508	Boiler body - 20 sections
2	8358-5509	Lateral section left
3	8358-5510	Lateral section right
4	8358-5511	Intermediate section
5	8116-0571	Nipple
6	8800-8966	Box of mastic (1 kg)
7	9430-5027	Putty for nipple 300g
8	8345-7020	Assembly rod LG670
8	8345-7022	Assembly rod Ø 10 x 870
8	8345-7024	Assembly rod Ø 10 x 1010
8	8345-7025	Assembly rod Ø 10 x 1195
8	8345-7026	Assembly rod Ø 10 x 1370
8	8345-7027	Assembly rod Ø 10 x 1550
8	8358-5512	Assembly rod M10 - 1730
9	9536-5611	Sensor tube 1/2"
10	9758-1286	Contact spring for sensor tube
11	8358-5554	Return pipe + Gasket - 8 sections
11.1	8358-5582	Return pipe + Gasket - 10 sections
11.2	8358-5560	Return pipe + Gasket - 12-16 sections
11.3	8358-5555	Return pipe + Gasket - 18-20 sections
12	8358-5553	Water flow pipe + Gasket
13	9758-1697	Plain square flange
14	9758-1119	Square flange with tapped hole 1/2"
15	9758-1630	Flange gasket
16	9495-0110	Plug 1/2"
17	9495-0140	Plug 3/4"
18	8345-0501	Locating lug
19	9750-5037	Brush
		Base frame + Draught diverter
20	8358-8501	Draught diverter complete - 8 sections
20	8358-8503	Draught diverter complete - 10 sections
20	8358-8505	Draught diverter complete - 12 sections
20	8358-8506	Draught diverter complete - 14 sections
20	8358-8507	Draught diverter complete - 16 sections
20	8358-8508	Draught diverter complete - 18 sections
20	8358-8509	Draught diverter complete - 20 sections
21	8116-8078	Nozzle Ø 250 - 8 sections
21	8345-8217	Nozzle Ø 300 - 10-12 sections
21	8345-8218	Nozzle Ø 350 - 14-18 sections
21	8123-8193	Nozzle Ø 400 - 20 sections
22	8358-5513	Sweeping plate - 8 sections
22	8358-5515	Sweeping plate - 10 sections
22	8358-5517	Sweeping plate - 12 sections
22	8358-5518	Sweeping plate - 14 sections
22	8358-5519	Sweeping plate - 16 sections
22	8358-5520	Sweeping plate - 18 sections
22	8358-5521	Sweeping plate - 20 sections
23	9587-0055	M6 wing nut
24	8358-8050	Rear upper cross-bar - 8 sections
24	8358-8052	Rear upper cross-bar - 10 sections
24	8358-8054	Rear upper cross-bar - 12 sections
24	8358-8055	Rear upper cross-bar - 14 sections
24	8358-8056	Rear upper cross-bar - 16 sections
24	8358-8057	Rear upper cross-bar - 18 sections
24	8358-8058	Rear upper cross-bar - 20 sections
25	8358-5561	Sweeping plate seal
26	9428-5095	Silicone filler tube
27	8358-5522	Fixing screw
31	8358-8739	Complete frame 8 sections
31	8358-8741	Complete frame 10 sections
31	8358-8743	Complete frame 12 sections
31	8358-8744	Complete frame 14 sections
31	8358-8745	Complete frame 16 sections
31	8358-8746	Complete frame 18 sections
31	8358-8747	Complete frame 20 sections
32	9758-1180	Central foot, rear
33	8358-8706	Complete combustion chamber - 8 sections
33	8358-8708	Complete combustion chamber - 10 sections
33	8358-8710	Complete combustion chamber - 12 sections
33	8358-8711	Complete combustion chamber - 14 sections
33	8358-8712	Complete combustion chamber - 16 sections
33	8358-8713	Complete combustion chamber - 18 sections
33	8358-8714	Complete combustion chamber - 20 sections
34	8358-8791	Complete combustion chamber insulation - 8 sections
34	8358-8793	Complete combustion chamber insulation - 10 sections

Markers	Code no.	Description
34	8358-8795	Complete combustion chamber insulation - 12 sections
34	8358-8796	Complete combustion chamber insulation - 14 sections
34	8358-8797	Complete combustion chamber insulation - 16 sections
34	8358-8798	Complete combustion chamber insulation - 18 sections
34	8358-8799	Complete combustion chamber insulation - 20 sections
35	9422-9236	Front insulation - 8 sections
35	9422-9238	Front insulation - 10 sections
35	9422-9240	Front insulation - 12 sections
35	9422-9241	Front insulation - 14 sections
35	9422-9242	Front insulation - 16-18-20 sections
36	9422-9277	Rear insulation - 8 sections
36	9422-9279	Rear insulation - 10 sections
36	9422-9281	Rear insulation - 12 sections
36	9422-9282	Rear insulation - 14 sections
36	9422-9283	Rear insulation - 16-18-20 sections
37	9422-9284	Side insulating material
38	8358-5557	Fixing screw
39	8358-1560	Painted tank - 8 sections
39	8358-1562	Painted tank - 10 sections
39	8358-1564	Painted tank - 12 sections
39	8358-1565	Painted tank - 14 sections
39	8358-1566	Assembled tank - 16 sections
39	8358-1567	Assembled tank - 18 sections
39	8358-1568	Assembled tank - 20 sections
40	9422-9286	Tank insulation - 8 sections
40	9422-9288	Tank insulation - 10 sections
40	9422-9290	Tank insulation - 12 sections
40	9422-9291	Tank insulation - 14 sections
40	9422-9292	Tank insulation - 16 sections
40	9422-9293	Tank insulation - 18 sections
40	9422-9294	Tank insulation - 20 sections
		Boiler body insulation
41	8358-5523	Insulating material for body - 8 sections
41	8358-5525	Insulating material for body - 10 sections
41	8358-5527	Insulating material for body - 12 sections
41	8358-5528	Insulating material for body - 14 sections
41	8358-5529	Insulating material for body - 16 sections
41	8358-5530	Insulating material for body - 18 sections
41	8358-5531	Insulating material for body - 20 sections
42	8358-4004	Rear insulation - 8 sections
42	8358-4006	Rear insulation - 10 sections

Markers	Code no.	Description
42	8358-4008	Rear insulation - 12 sections
42	8358-4009	Rear insulation - 14 sections
42	8358-4010	Rear insulation - 16 sections
42	8358-4011	Rear insulation - 18 sections
42	8358-4012	Rear insulation - 20 sections
43	8358-4014	Upper front insulation - 8 sections
43	8358-4016	Upper front insulation - 10 sections
43	8358-4018	Upper front insulation - 12 sections
43	8358-4019	Upper front insulation - 14 sections
43	8358-4020	Upper front insulation - 16 sections
43	8358-4021	Upper front insulation - 18 sections
43	8358-4022	Upper front insulation - 20 sections
44	8358-4024	Lower front insulation - 8 sections
44	8358-4026	Lower front insulation - 10 sections
44	8358-4028	Lower front insulation - 12 sections
44	8358-4029	Lower front insulation - 14 sections
44	8358-4030	Lower front insulation - 16 sections
44	8358-4031	Lower front insulation - 18 sections
44	8358-4032	Lower front insulation - 20 sections
45	8358-4033	Side insulation, right - 8-10-12 sections
45	8358-4034	Side insulation, right - 14-16-18-20 sections
46	8358-4035	Side insulation, left - 8-10-12 sections
46	8358-4036	Side insulation, left - 14-16-18-20 sections
47	8358-4038	Upper insulation - 8 sections
47	8358-4040	Upper insulation - 10 sections
47	8358-4042	Upper insulation - 12 sections
47	8358-4043	Upper insulation - 14 sections
47	8358-4044	Upper insulation - 16 sections
47	8358-4045	Upper insulation - 18 sections
47	8358-4046	Upper insulation - 20 sections
48	8406-8082	Fastening
		Control panel K
69	200003771	Control panel
71	200003824	Front panel support + CMF facade cover
73	9421-0705	Control panel front cover K
74	9536-5157	Flat thermometer
75	8500-0002	Thermostat adjustable from 30 to 90°C
76	8500-0032	Safety thermostat 110°C
77	9521-6281	Round green indicator
78	8555-5501	Setting button + Pin
79	9532-5027	Green S/S bipolar switch
80	9532-5102	Reset switch
81	8500-0034	Momentary bipolar switch
82	8500-0035	Bipolar switch

Markers	Code no.	Description
83	9534-0288	4A TS710/4A Circuit-breaker
84	8358-4900	Control panel harness K
85	300012222	Safety box RV 0054140000
86	9532-5103	Bipolar switch
88	8358-4907	1-5 connector, assembled DGAI. 73
89	8358-4904	Power supply harness
90	8358-4912	3 pin IT-AMP circuit
91	8358-4905	Ionization sensor circuit
92	200003258	Harness for third party control unit
93	9758-1286	Spring for sensor tube
94	8502-5519	Fasteners
95	8358-4908	1-6 connector, assembled DGAI. 73
96	8358-4909	7-8 connector, assembled DGAI. 73
		Metal casing for control panel K
140	8358-8720	Protection cap
141	8358-5559	Card supports
142	8358-5558	Control panel bracket
143	8502-5560	Piano hinges (2 items)
144	8387-5556	Flap
		Gas line - 20 mbar
150	8388-8696	Gas line - 8 sections
150	8358-8698	Gas line - 10 sections
150	8358-8700	Gas line - 12 sections
150	8358-8701	Gas line - 14 sections
150	8358-8702	Gas line - 16 sections
150	8358-8703	Gas line - 18 sections
150	8358-8704	Gas line - 20 sections
151	9536-1561	Valve MB-ZRDLE 410B01
151	9536-1562	Valve MB-ZRDLE 412B01
151	9536-1563	Valve MB-ZRDLE 415B01
152	9496-0535	Union elbow 1"
152	9496-0536	Union elbow 1"1/4
152	9496-0537	Union elbow 1"1/2
153	9501-3064	Green seal 44x32x2
153	9501-3065	Green seal 56x42x2
153	9501-3066	Green seal 62x46x2
154	9754-9204	Flange + Plug 1"
154	9754-9205	Flange + Plug 1"1/4
154	9754-9213	Flange + Plug 1"1/2
155	9754-9212	Gas flange with pressure socket 1"
155	9536-1003	Gas flange with pressure socket 1"1/4
155	9754-9214	Gas flange with pressure socket 1"1/2
156	8358-5583	Pilot burner pipe
157	9754-9216	Knob
158	9764-6000	Gas pressure switch

Markers	Code no.	Description
187	9533-2831	Ignition electrode
188	9533-2841	Ionization electrode
190	8358-5563	Burner support - 8 sections
190	8358-5565	Burner support - 10 sections
190	8358-5567	Burner support - 12 sections
190	8358-5568	Burner support - 14 sections
190	8358-5569	Burner support - 16 sections
190	8358-5570	Burner support - 18 sections
190	8358-5571	Burner support - 20 sections
191	8358-5572	FURIGAS burner + Screw
192	8358-5573	Insulation, burner drawer - 8 sections
192	8358-5575	Insulation, burner drawer - 10 sections
192	8358-5577	Insulation, burner drawer - 12 sections
192	8358-5578	Insulation, burner drawer - 14 sections
192	8358-5579	Insulation, burner drawer - 16 sections
192	8358-5580	Insulation, burner drawer - 18 sections
192	8358-5581	Insulation, burner drawer - 20 sections
	8800-8961	Glue 1000 (100 ml can)
193	8358-8280	Burner stiffener - 8 sections
193	8358-8282	Burner stiffener - 10 sections
193	8358-8284	Burner stiffener - 12 sections
193	8358-8285	Burner stiffener - 14 sections
193	8358-8286	Burner stiffener - 16 sections
193	8358-8287	Burner stiffener - 18 sections
193	8358-8288	Burner stiffener - 20 sections
194	8358-8760	FURIGAS complete pad
195	9755-3151	Ignition transformer ANSTOS
196	9654-4002	EMI-supressor filter
197	9532-0579	Grommet
198	9532-0186	Cable clamp
199	8358-8228	Top cover
200	8358-4913	3 pin AMP cable - filter
201	8358-4906	Ignition transformer cable - spark plug
202	8358-4914	Earth wire
203	8358-4915	Black wire, filter - ignition transformer
204	8358-4916	Blue wire, filter - ignition transformer
205	8350-4911	Gas line connector
206	8350-4915	Gas pressure switch connector
207	8358-8601	Ignition burner
208	9758-0449	Ignition burner injector
209	9536-1538	Ignition burner valve
210	9494-8065	Nipple N245 1/4" x 1/8"
211	9492-6030	Tee 1/4"
212	9494-6035	Nipple N280 1/4"
212	9494-8055	Nipple N241 1/4" x 1/8"

Markers	Code no.	Description
214	9536-0220	Pressure socket
215	8358-8338	Flame non-return plate - 8 sections
215	8358-8340	Flame non-return plate - 10 sections
215	8358-8342	Flame non-return plate - 12 sections
215	8358-8343	Flame non-return plate - 14 sections
215	8358-8344	Flame non-return plate - 16 sections
215	8358-8345	Flame non-return plate - 18 sections
215	8358-8346	Flame non-return plate - 20 sections
		Circuit separation transformer
761	9654-1620	Circuit separation transformer
762	8358-8737	Screws
763	8358-4922	Cable conductor
		Casing
230	200003920	Complete casing - 8 sections
230	200003921	Complete casing - 10 sections
230	200003922	Complete casing - 12 sections
230	200003923	Complete casing - 14 sections
230	200003924	Complete casing - 16 sections
230	200003925	Complete casing - 18 sections
230	200003926	Complete casing - 20 sections
231	8358-8618	Complete front casing support - 8 sections
231	8358-8620	Complete front casing support - 10 sections
231	8358-8622	Complete front casing support - 12 sections
231	8358-8623	Complete front casing support - 14 sections
231	8358-8624	Complete front casing support - 16 sections
231	8358-8625	Complete front casing support - 18 sections
231	8358-8626	Complete front casing support - 20 sections
232	8358-6572	Complete left panel
233	8358-6573	Complete right panel
234	8358-8208	Holding bracket - 8 sections
234	8358-8210	Holding bracket - 10 sections
234	8358-8212	Holding bracket - 12 sections
234	8358-8213	Holding bracket - 14 sections
234	8358-8214	Holding bracket - 16 sections
234	8358-8215	Holding bracket - 18 sections
234	8358-8216	Holding bracket - 20 sections
235	8358-0621	Painted cover - 8 sections
235	8358-0623	Painted cover - 10 sections
235	8358-0625	Painted cover - 12 sections
235	8358-0626	Painted cover - 14 sections
235	8358-0627	Painted cover - 16 sections
235	8358-0628	Painted cover - 18 sections
235	8358-0629	Painted cover - 20 sections
236	200003470	Upper front panel - 8 sections
236	200003471	Upper front panel - 10 sections
236	200003472	Upper front panel - 12 sections
236	200003473	Upper front panel - 14 sections
236	200003474	Upper front panel - 16 sections
236	200003475	Upper front panel - 18 sections
236	200003576	Upper front panel - 20 sections
237	200003513	Inside front panel - 8 sections
237	200003514	Inside front panel - 10 sections
237	200003515	Inside front panel - 12 sections
237	200003516	Inside front panel - 14 sections
237	200003517	Inside front panel - 16 sections
237	200003518	Inside front panel - 18 sections
237	200003519	Inside front panel - 20 sections
238	8358-8947	Complete lower front panel - 8 sections
238	8358-8949	Complete lower front panel - 10 sections
238	8358-8951	Complete lower front panel - 12 sections
238	8358-8952	Complete lower front panel - 14 sections
238	8358-8953	Complete lower front panel - 16 sections
238	8358-8954	Complete lower front panel - 18 sections
238	8358-8955	Complete lower front panel - 20 sections
239	8358-8938	Upper rear panel - 8 sections
239	8358-8940	Upper rear panel - 10 sections
239	8358-8942	Upper rear panel - 12 sections
239	8358-8943	Upper rear panel - 14 sections
239	8358-8944	Upper rear panel - 16 sections
239	8358-8945	Upper rear panel - 18 sections
239	8358-8946	Upper rear panel - 20 sections
240	8358-8306	Lower back panel - 8 sections
240	8358-8308	Lower back panel - 10 sections
240	8358-8310	Lower back panel - 12 sections
240	8358-8311	Lower back panel - 14 sections
240	8358-8312	Lower back panel - 16 sections
240	8358-8313	Lower back panel - 18 sections
240	8358-8314	Lower back panel - 20 sections
241	8358-6583	Additional part - 8 sections
241	8358-6585	Additional part - 10 sections
241	8358-6587	Additional part - 12 sections
241	8358-6588	Additional part - 14 sections
241	8358-6589	Additional part - 16 sections
241	8358-6590	Additional part - 18 sections
241	8358-6591	Additional part - 20 sections
242	8358-5562	10 collar kit

Markers	Code no.	Description
243	8358-8629	Housing screws packet
244	8358-8327	Deflector, rear panel

CE
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